

APPENDIX

Changes to Title:

The following is a marked-up version of the amended title:

~~DRIVING-SYSTEM AND METHOD FOR DRIVING A DISPLAY DEVICE, DRIVING-
CIRCUIT, DISPLAY DEVICE, AND ELECTRONIC EQUIPMENT~~

Changes to Abstract:

The following is a marked-up version of the amended Abstract.

ABSTRACT

The present invention provides a system and method for driving a display device
where ~~Out-out~~ of a display screen, only pixels at intersections of particular scanning lines and
particular data lines are used as a display area. In order ~~To~~ to save power, the particular
scanning lines are selected one for each horizontal scanning period. For one of the two split
halves of the one horizontal scanning period, the selected scanning line is supplied with a
selection voltage, and the polarity of the selection voltage is inverted at least every two or
more horizontal scanning periods. The scanning lines other than the particular scanning lines
are supplied with a non-selection voltage, which is inverted at least every one vertical
scanning period. For a duration of time during which the particular scanning lines are
selected, the data lines other than the particular data lines are supplied with a non-lighting
voltage in accordance with the polarity of the selection voltage applied to the selected
scanning line, and the polarity of the non-lighting voltage is inverted every two or more
horizontal scanning periods responsive to the period of the polarity inversion of the selection
voltage.

Changes to Specification:

A Substitute Specification is attached in accordance with 37 C.F.R. 1.125(b)(2).

Changes to Claims:

The following is a marked-up version of the amended claims:

1. (Amended) A driving method of a display device for driving ~~a pixel~~pixels which ~~is~~are arranged at each of intersections of a plurality of scanning lines and a plurality of data lines, comprising:

wherein setting a pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of the plurality of data lines ~~is set~~ to be in a display state while the remaining pixels are set to be in a non-display state;

the selecting particular scanning lines ~~are selected~~, one line for every horizontal scanning period with a selection voltage supplied to the selected scanning line for one of ~~the two~~ split halves of the one horizontal scanning period, the polarity of the selection voltage ~~is being~~ inverted with respect to an intermediate value between a lighting voltage and a non-lighting voltage, supplied to the data line, every two or more horizontal scanning periods;

supplying each of the scanning lines other than the particular scanning lines ~~is supplied~~ with a non-selection voltage which is inverted in polarity with respect to the intermediate value every one or more vertical scanning periods;

supplying each of the particular data lines ~~is supplied~~ with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line; for a period; during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines, the particular data line ~~is being~~ supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line; and

supplying the data line other than the particular data lines ~~is supplied~~ with the non-lighting voltage for a period during which the particular scanning lines are consecutively selected in response to the polarity of the selection voltage supplied to the selected scanning

lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage.

2. (Amended) ~~A~~ The driving method of a display device according to claim 1, wherein:

- _____ when one of the particular scanning line is selected, the selected scanning line is supplied with the selection voltage for a second half of one horizontal scanning period;

and

when a subsequent scanning line is selected, the selected scanning line is supplied with the selection voltage for a first half of one horizontal scanning period;

the supply of the selection voltage alternates between during one half period and during the other half period, every one horizontal scanning period.

3. (Amended) ~~A~~ The driving method of a display device according to claim 2, wherein:

- _____ when the selection voltage is supplied during the second half period, the particular data line is supplied with the lighting voltage from a time point earlier than ~~the an~~ end of the second half period by the duration, corresponding to a tonal gradation of a pixel at an intersection of the selected scanning line and the particular data line, ~~till~~ until the end of the second half period, and is supplied with the non-lighting voltage during the remaining time of the second half period;

when the selection voltage is supplied during the first half period, the particular data line is supplied with the lighting voltage from ~~the a~~ beginning of the first half period ~~till~~ until a time point later than the beginning of the first half period by the duration, corresponding to the tonal gradation of the pixel at the intersection of the selected scanning line and the particular data line, and is supplied with the non-lighting voltage during the remaining time of the first half period.

4. (Amended) A driving method of a display device according to claim 1, wherein for a duration of time during which the scanning lines other than the particular scanning lines are consecutively selected,
 _____ the data lines are supplied with a signal having a positive voltage portion and a negative voltage portion with respect to the intermediate value, the signal alternating between the positive voltage portion and the negative voltage portion with respect to the intermediate value every one or more horizontal scanning periods.

5. (Amended) A driving method of a display device according to claim 4, wherein the polarity inversion period of the signal having the positive voltage portion and the negative voltage portion is ~~approximately~~ a fraction of the horizontal scanning period, ~~and the fraction is being~~ determined by dividing the total number of the scanning lines other than the particular scanning lines by an integer number equal to two or ~~larger~~ more.

6. (Amended) A driving circuit of a display device for driving ~~a pixel~~ pixels which ~~is~~ are arranged at each of intersections of a plurality of scanning lines and a plurality of data lines-, in which a pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of the plurality of data lines is set to be in a display state while the remaining pixels are set to be in a non-display state,

_____ the driving circuit comprising:

- _____ a scanning line driving circuit and a data line driving circuit;

wherein the scanning line driving circuit selects the particular scanning lines, one line for every horizontal scanning period with a selection voltage supplied to the selected scanning line for one of ~~the~~ two split halves of the one horizontal scanning period, inverts the polarity of the selection voltage with respect to an intermediate value between a lighting voltage and a non-lighting voltage, supplied to the data line, every two or more horizontal scanning periods, and

09/921,583 "11304"

_____ supplies the scanning line other than the particular scanning lines with a non-selection voltage which is inverted in polarity with respect to the intermediate value every one or more vertical scanning periods, and

the data line driving circuit supplies the particular data line with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line, for a period, during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines, supplies the particular data line with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line, and

_____ supplies the data line other than the particular data line with the non-lighting voltage for a period during which the particular scanning lines are consecutively selected in response to the polarity of the selection voltage supplied to the selected scanning lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage.

7. (Amended) A- The driving circuit of a display device according to claim 6, wherein when one of the particular scanning line is selected, the scanning line driving circuit supplies the selected scanning line with the selection voltage for a second half of one horizontal scanning period, and

when a subsequent particular scanning line is selected, the scanning line driving circuit supplies the selected scanning line with the selection voltage for a first half of one horizontal scanning period, and

the supply of the selection voltage alternates between during one half period and during the other half period, every one horizontal scanning period.

09921583-111304

8. (Amended) A-The driving circuit of a display device according to claim 7, wherein when the selection voltage is supplied during the second half period, the data line driving circuit supplies the particular data line with the lighting voltage from a time point earlier than the end of ~~the~~a second half period by the duration, corresponding to a tonal gradation of a pixel at an intersection of the selected scanning line and the particular data line, ~~till the~~until an end of the second half period, and is supplied with the non-lighting voltage during ~~the~~a remaining time of the second half period, and

when the selection voltage is supplied during ~~the~~a first half period, the data line driving circuit supplies the particular data line with the lighting voltage from ~~the~~a beginning of the first half period ~~till~~until a time point later than the beginning of the first half period by the duration corresponding to the tonal gradation of the pixel at the intersection of the selected scanning line and the particular data line, and is supplied with the non-lighting voltage during the remaining time of the first half period.

9. (Amended) A-The driving circuit of a display device according to claim 6, wherein for a duration of time during which the scanning lines other than the particular scanning lines are consecutively selected,
 _____ the data line driving circuit supplies the data line with a signal having a positive voltage portion and a negative voltage portion with respect to the intermediate value, the signal alternating between the positive voltage portion and the negative voltage portion with respect to the intermediate value every one or more horizontal scanning periods.

10. (Amended) A-The driving circuit of a display device according to claim 9, wherein the polarity inversion period of the signal having the positive voltage portion and the negative voltage portion is approximately a fraction of the horizontal scanning period, and the fraction is determined by dividing the total number of the scanning lines other than the particular scanning lines by an integer number equal to two or ~~larger~~more.

11. (Amended) A display device for driving ~~a pixel which is~~ pixels that are arranged at each of intersections of a plurality of scanning lines and a plurality of data lines, in which a pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of the plurality of data lines is set to be in a display state while the remaining pixels are set to be in a non-display state,

_____ the display device comprising:-

_____ a scanning line driving circuit and a data line driving circuit,

wherein the scanning line driving circuit selects the particular scanning lines, one line for every horizontal scanning period with a selection voltage supplied to the selected scanning line for one of ~~the two~~ split halves of the one horizontal scanning period, ~~inverts the~~ a polarity of the selection voltage with respect to an intermediate value between a lighting voltage and a non-lighting voltage, supplied to the data line, every two or more horizontal scanning periods, and

_____ supplies the scanning line other than the particular scanning lines with a non-selection voltage which is inverted in polarity with respect to the intermediate value every one or more vertical scanning periods, and

the data line driving circuit supplies the particular data line with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line, for a period, during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines, supplies the particular data lines with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line, and

_____ supplies the data line other than the particular data lines with the non-lighting voltage for a period during which the particular scanning lines are consecutively selected in

09/921,583

response to the polarity of the selection voltage supplied to the selected scanning lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage.

12. (Amended) A-The display device according to claim 11, wherein the pixel further comprises:-

_____ a switching element and a capacitive element containing an electro-optical material, and

wherein when one scanning line is supplied with the selection voltage, the switching element of the pixel assigned to the selected scanning line becomes conductive, and writing is performed on ~~the~~ a capacitive element corresponding to the switching element in response to a lighting voltage supplied to the corresponding data line.

13. (Amended) A-The display device according to claim 12, wherein the switching element is a two-terminal switching element, and the pixel is formed of the two-terminal switching element and the capacitive element connected in series between the scanning line and the data line.

14. (Amended) A-The display device according to claim 13, wherein the two-terminal switching element has a structure of conductor-insulator-conductor connected to one of the scanning line and the data line.

15. (Amended) Electronic equipment comprising a display device according to ~~one of claims 11 through 14~~ claim 11.

09/921,583-11301